

### **REMARKS/ARGUMENTS**

The Examiner is thanked for his review of the application.

Claims 1 - 13 remain in this application. Claims 1, 2, and 4 – 6 have been amended.

In the Office Action for the original application, dated May 24, 2005 the Examiner rejected Claims 1, 4, and 5 under 35 U.S.C. 103(a) as being unpatentable over Ouimet et al. (US 6,094,641), and further in view of Ouimet et al. (US 6,078,893).

Regarding Claim 1 the Examiner has stated that “Ouimet ‘641 discloses: an econometric engine for modeling sales as a function of price to create a sales model, (Col. 4, lines 35-44, [demand model gives predicted sales of an item based on price]); a financial model engine for modeling costs to create a cost model, (col. 4, lines 52-53, [pricing model]), which includes an activity-based costing module, Col. 2, lines 1-12, including visibility, and taking the promotional cost into account when modifying the demand model, in this case, the module is inherent with Ouimet since Ouimet’s system is computer-implemented and in order to create models, a module is necessary in a computerized system); and an optimization engine coupled to the econometric engine and financial model engine to receive input from the econometric engine and financial model engine, wherein the optimization engine generates the preferred set of prices, (Col. 5, lines 45-48, [using fitted, modified demand model to determine price that will maximize profits, {optimization}])). Ouimet ‘641 fails to disclose a configuration to receive variable costs and fixed costs, but does disclose a pricing module in col. 4, lines 52-53. However, Ouimet ‘893 discloses: configured to receive variable costs and fixed costs, (col. 6, lines 42-61, shows that when a user selects a market model, it can be one with no price change or one that does not contain adjustable market model parameters, also shows the model using adjustable parameters, in this case, the parameters are directly proportional to the variables, therefore, if the parameters are adjusted, so are the variables such as price). Ouimet ‘893 discloses this limitation in an analogous art for the purpose of showing that market models can be represented by using values that change/are adjustable, and also do not need to contain adjustable values. It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to receive

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variable costs and fixed costs with the motivation of creating both a fixed or variable market model.”

Regarding Claim 4, the Examiner has stated that “Ouimet ‘641 discloses: creating a sales model, (Col. 4, lines 35-44, [demand model gives predicted sales of an item based on price]); creating a cost model, (col. 4, lines 52-53, [pricing model]), which includes activity-based costing, Col. 2, lines 1-12, including visibility, and taking the promotional cost into account when modifying the demand model); and generating the preferred set of prices for the plurality of products based on the sales model and cost model, (Col. 5, lines 45-48, [using fitted, modified demand model to determine price that will maximize profits, {optimization}])). Ouimet ‘641 fails to disclose the activity-based costing including fixed costs and variable costs, but does disclose a pricing module in col. 4, lines 52-53. However, Ouimet ‘893 discloses: the activity-based costing including fixed costs and variable costs, (col. 6, lines 42-61, shows that when a user selects a market model, it can be one with no price change or one that does not contain adjustable market model parameters, also shows the model using adjustable parameters, in this case, the parameters are directly proportional to the variables, therefore, if the parameters are adjusted, so are the variables such as price). Ouimet ‘893 discloses this limitation in an analogous art for the purpose of showing that market models can be represented by using values that change/are adjustable, and also do not need to contain adjustable values. It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to receive variable costs and fixed costs with the motivation of creating both a fixed or variable market model.”

Claim 1 has been amended to recite “wherein said cost model determines a total cost for each product in a given demand group in a given store for a given time period by computing a cost for each selected costing activity.” Similarly, Claim 4 has been amended to recite “wherein said cost model determines a total cost for each product in a given demand group in a given store for a given time period by computing a cost for each selected costing activity.” Support for these amendments can be found in the specification at, for example, page 76, lines 2 – 5, “[a]ctivity-based costing module computes variable and fixed costs for products at specific store locations . . . to track costing activities at retailers’ distribution centers and regional stores” (emphasis added); page 81, lines 20 – 21, “[t]o calculate the cost of a product in a demand group in a store at a time,

fixed and variable cost components are computed”; and page 96, lines 5 – 19 (listing of various fixed and variable costing activities).

The present invention teaches that “financial model engine 108 should be flexible enough to provide a cost model for different procedures. These different costs may have variable cost components where the cost of an item is a function of the amount of sales of the item and fixed cost components where the cost of an item is not a function of the amount of sales of the item” (see specification, page 74, line 22 to page 75, line 3). In the preferred embodiment of the inventions, the stores may only need to supply labor costs of the stores and distribution centers, costs of capital, size of and item and number of items in a case to allow a cost modeling (see specification, page 75, lines 9 -12 ). This invention is advantageous because by using “these estimations, costs may be more easily calculated on a store level . . . [and] allows the maximization of profits fore each store (see specification, page 75, lines 18 -19).

The instant costing model takes information from specific products in specific stores to calculate the total cost of said product. As noted above, the costing model is configured to receive information regarding labor costs, stocking time, transportation costs and the like. This information is used to compute the cost contribution of each costing activity associated with each product at a particular store. Costs associated with, for instance, stocking costs at a distribution center, transportation costs, receiving costs, inventory costs, labor costs, bag costs, checkout costs, and invoice related costs are computed and used to determine the total cost for a particular product (see specification, page 96, lines 5 – 19). The costing model may use data from specific stores, as well as industry data to provide standard estimates of common parameters (see specification page 75, lines 6 – 7). In this way, the instant costing model is able to incorporate all relevant costing activities in order to give a total cost of a product.

Ouimet ‘641 teaches the concept of “visibility which is defined as the amount by which the demand for an item is increased when a given promotion is run. Associated with each promotion is a visibility, which in general can be determined from empirical study, and a promotion cost, i.e., the amount of money spent on the promotion. By including the visibility in the demand model and also taking into account the promotional cost, the pricing and promotional

decisions can be optimized together such that an optimized maximum profit can be obtained”

(Col. 2, lines 3 -12).

Promotional cost as defined by Ouimet ‘641 refers to “the amount of money spent on the promotion”. In contrast, the activity-based costing as recited in Claims 1 and 4 include all of the costing activities noted above. Therefore, promotional cost is inadequate in quantifying the true cost and therefore the true profitability. In addition, as recited by Claims 1 and 4, activity-based costing provides a flexible means of accounting for any and all costs related with a particular product. These calculations of activity-based costing go above and beyond the promotional costs as disclosed by Ouimet ‘641.

Hence, as amended, independent Claims 1 and 4 are allowable over Ouimet ‘641. Applicant further submits that Claims 2 and 3, which depend from Claim 1; and Claim 5, which depends from Claim 4, are also patentable due to their dependence from their respective patentable parent Claims. Furthermore, these dependent claims are also novel, non-obvious and patentable because of the additional patentable features recited in addition to the patentable combination of their respective parent claims.

Regarding Claim 5, the Examiner has stated that “Ouimet ‘641 discloses: creating a sales model...(Col. 4, lines 35-44, [demand model gives predicted sales of an item based on price]). Ouimet ‘641 fails to disclose creating a plurality of demand groups, wherein each demand group is a set of at least one product and wherein at least one of the demand groups is a set of at least two products, but does disclose utilizing demand models to predict prices in the abstract, lines 1-5. However, Ouimet ‘893 discloses creating a plurality of demand groups, wherein each demand group is a set of at least one product and wherein at least one of the demand groups is a set of at least two products, (col. 8, lines 29-35, [selecting demand model by breaking up a retailer’s market into smaller groups]). Ouimet ‘893 discloses this limitation in an analogous art for the purpose of showing that groups are used to determine demand. It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to create a plurality of demand groups with the motivation of optimizing models according to categories. Ouimet ‘641 fails to disclose creating a market share model for each product in each demand group, but does disclose the utilization of a demand model to optimize prices. However, Ouimet ‘893 discloses:

creating a market share model for each product in each demand group, (col. 8, lines 35-37, [maximize market share by using demand model])). Ouimet '893 discloses this limitation in an analogous art for the purpose of showing that market share can be modeled and maximized by using the demand model. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to create a market share model for each product in each demand group with the motivation of determining market shares according to categories."

Claim 5 has been amended to recite "creating a sales model for each demand group for modeling sales of each demand group for a given time period in a given store"; and "creating a market share model for each product in each demand group for modeling the fraction of each demand group sales made up by each product for said time period." Support for the amendment can be found in the specification on page 63, lines 14 – 17 "sales of demand group  $i$  in period  $t$  in store  $s$  in dollars. Equivalent sales may be defined as sales of equivalent units of products being compared"; and page 69, lines 7 – 8 "[t]he fraction of demand group  $i$  equivalent sales comprised by product  $k$  in time period  $t$  (market share of product  $k$ )."

The reference in Ouimet '893 to "selecting demand model by breaking up a retailer's market into smaller groups (col. 8, lines 29 – 35), is very different to the instant concept of demand group. Ouimet '893 is referring to the process of breaking up a retailer's market which consists of the geographic presence of a retailer's stores, into a set of smaller geographic clusters by store. The instant concept of demand groups, on the other hand, clusters products, not stores. The instant concept of a demand group is defined as a "set of highly substitutable products (see specification, page 17, line 2). Claim 5 has been amended to more distinctly describe the instant sales model which models sales for each demand group in its particular store.

The market share reference in Ouimet '893 (col. 8, lines 35 – 37) is to the share of a retailer in a geographic market. The instant concept of market share is the share of the total demand of a demand group made up by a given product (see specification, page 69, lines 7 – 8). This is in contrast to the market share disclosed in Ouimet '893 which is with reference to other retailers in the external market as opposed to the instant market share of the internal market of a retailer's store. Claim 5, as amended, clearly distinguishes the instant market share model over the cited prior art. Hence, as amended, Claim 5 is allowable over Ouimet '641 and Ouimet '893.

The Examiner has rejected Claims 2 and 3 under 35 U.S.C. 103(a) stating that they are “unpatentable over Ouimet et al. (US 6,094,641) as applied to claim 1 above, and further in view of Ouimet et al. (US 6,078,893), and further in view of Ouimet et al. (US 6,308,162).”

Regarding Claim 2, the Examiner has stated that “Ouimet ‘641 discloses: a price calculator connected to...the financial model engine, and the econometric engine, wherein the price calculator determines the preferred set of prices based on rule parameters, the sales model, and the cost model, (Col. 8, lines 18-20, [shows calculating], col. 5, lines 50-55 and 60-65, [see equations listed where calculating is done via the equations]). Neither Ouimet ‘641 nor Ouimet ‘893 disclose a business rule tool, which stores a plurality of rule parameters, but Ouimet ‘641 does disclose a routine in col. 6, lines 6-8, where rules must be present in order to successfully process the routine. However, Ouimet ‘162 discloses the following: a business rule tool, which stores a plurality of rule parameters, (col. 1, lines 30-34, [rule based approach]). Ouimet ‘162 discloses this limitation in an analogous art for the purpose of showing that rules are used in an approach to optimize models. It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to utilize a rule tool with the motivation of going through the process of optimizing models to determine prices in a logical matter.”

Regarding Claim 3, the Examiner has stated that “Ouimet ‘641 discloses: further comprising a support tool connected to the optimization engine wherein the support tool receives the preferred set of prices from the optimization engine and provides a user interface to a client, wherein the user interface provides the preferred set of prices to the client, (col. 6, lines 17-26, [provided with list], w/Fig. 1, {102}, [display]).”

Claim 2 has been amended to recite “further wherein said rule parameters constrain the preferred set of prices to fall within limits conforming to business strategy.” Support for the amendment can be found in the specification on page 103, lines 5 - 8 “the preferred embodiment may model several other business rules via constraints. These include limits on group price advance or decline, brand pricing rules, size pricing rules and unit pricing rules.”

Ouimet '162 discloses rule-based pricing systems to contrast them with model based pricing systems (col. 1, lines 30 – 34). These rule-based systems do not optimize the decision to maximize an objective such as profit or revenue, but work instead by activating a set of pre-defined rules to generate an action. The instant business rule tool is not comparable to these rule-based systems. The business rule tool in Claim 2 consists of a mechanism by which business rules that govern strategy can be included in the optimization. These rules ensure that the preferred set of prices actually conforms to the business strategy, and this capability significantly enhances model based pricing systems by making their recommendations practical and actionable. (See specification, page 97, lines 12 – 14).

As amended, Claim 2 more clearly delineates the novel aspects of the instant business rule tool. In particular, the rule tool is used to constrain the optimized set of preferred prices to fall within acceptable limits defined by business considerations. Several business rules and their implementation within an optimization framework are described in the specification. (See pages 103 – 107). These business rules include rules that govern maximum price change, price differentials between products based on their brands or sizes, line price constraints and average or weighted average price movement restrictions. These constraints limit the sets of preferred prices that are deemed acceptable by a pricing analyst or a category manager and the optimization routines must deliver prices that conform to them. Rule based systems, on the other hand, specify a recipe for responding to specific stimuli like competitor price changes, etc. They specify rule of action rules rather than rules that define business strategy.

Hence, as amended, independent Claim 2 is allowable over Ouimet '641, Ouimet '893, and Ouimet '162. Applicant further submits that Claim 3, which depends from Claim 2 is also patentable due to its dependence from Claim 2. These dependent claims are novel, non-obvious and patentable because of the additional patentable features discussed above in addition to the patentable combination of their respective parent claim, Claim 1.

The Examiner has also rejected Claims 6, 7, 8, 10, 11, 12 under 35 U.S.C. 103(a) as being unpatentable over Ouimet et al. (US 6,094,641) and further in view of Hartman et al. (6,725,208).

Regarding Claim 6, the Examiner has stated that “Ouimet et al. ‘641 discloses: an econometric engine for modeling sales as a function of price to create a sales model, (Col. 4, lines 35-44, [demand model gives predicted sales of an item based on price]); a financial model engine for modeling costs to create a cost model, (col. 4, lines 52-53, [pricing model]), which includes an activity-based costing module, Col. 2, lines 1-12, including visibility, and taking the promotional cost into account when modifying the demand model, in this case, the module is inherent within Ouimet since Ouimet’s system is computer-implemented and in order to create models, a module is necessary in a computerized system); and an optimization engine coupled to the econometric engine and financial model engine to receive input from the econometric engine and financial model engine to receive input from the econometric engine and financial model engine, wherein the optimization engine generates the preferred set of prices, (Col. 5, lines 45-48, [using fitted, modified demand model to determine price that will maximize profits, {optimization}])). Ouimet et al. ‘641 fails to disclose based on Bayesian modeling, but does disclose utilizing demand models to optimize prices in the abstract, lines 1-5. However, Hartman et al. discloses: Based on Bayesian modeling, (Abstract, lines 1-4, shows Bayesian modeling used for optimization])). Hartman et al. discloses this limitation in an analogous art for the purpose of show in that Bayesian modeling can be used to determine optimal prices. It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to utilize Bayesian modeling with the motivation of processing a particular optimization technique to determine prices.”

Regarding Claims 7 and 8, the Examiner has stated that “Ouimet et al. ‘641 fails to disclose wherein the Bayesian model is a Bayesian Shrinkage model or where the Bayesian Shrinkage model is a multi-stage model, but does disclose utilizing demand models to optimize prices in the abstract, lines 1-5. Official notice is taken that it is old and well known in the art for Bayesian models to be Bayesian Shrinkage models and for the Bayesian Shrinkage models to be multi-stage models. It would have been obvious to one of ordinary at the time of the applicant’s invention for the Bayesian models to be Bayesian Shrinkage models and for the Bayesian Shrinkage models to be multi-stage models with the motivation of using these types of models to effectively come up with optimization results through a step-by-step process.”



Regarding Claim 10, the Examiner has stated that “Ouimet et al. ‘641 discloses: wherein the market conditions include a price point, (col. 7, lines 44-48, [price point]).”

Regarding Claim 11, the Examiner has stated that “Ouimet et al. ‘641 fails to disclose wherein the econometric engine divides the plurality of products into a plurality of demand groups, where at least one of said demand groups has at least two of said products in said at least one demand group, but does disclose utilizing demand models to predict prices in the abstract, lines 1-5. However, Ouimet ‘893 discloses divides the plurality of products into a plurality of demand groups, where at least one of said demand groups has at least two of said products in said at least one demand group, (col. 8, lines 29-35, [selecting demand model by breaking up a retailer’s market into smaller groups]). Ouimet ‘893 discloses this limitation in an analogous art for the purpose of showing that groups are used to determine demand. It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to divide the plurality of products into a plurality of demand groups, where at least one of said demand groups has at least two of said products in said at least one demand group with the motivation of optimizing models according to categories.”

Regarding Claim 12, the Examiner has stated that “Ouimet et al. ‘641 fails to disclose wherein the econometric engine generates a market share model for said products in said demand groups, but does disclose the utilization of a demand model to optimize prices. However, Ouimet ‘893 discloses: wherein the econometric engine generates a market share model for said products in said demand group, (col. 8, lines 35-37, [maximize market share by using demand model]). Ouimet ‘893 discloses this limitation in an analogous art for the purpose of showing that market share can be modeled and maximized by using the demand model. It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to generate a market share model for said products in said demand group with the motivation of determining market shares according to categories.”

The Examiner has also rejected Claim 9 under 35, U.S.C. 103(a) stating that it is “unpatentable over Ouimet et al. (US 6,094,641) and further in view of Hartman et al. (6,725,208), and further in view of Ouimet et al. (US 6,078,893). As per claim 9, neither Ouimet et al. ‘641 nor Hartman et al. disclose wherein the econometric engine provides demand

coefficients to the optimization engine, the demand coefficients used for estimating demand given market conditions, but Ouimet et al. '641 does disclose using demand models to create optimized outputs in the abstract, lines 1-17. However, Ouimet et al. '893 discloses: wherein the econometric engine provides demand coefficients to the optimization engine, the demand coefficients used estimating demand given market conditions, (Col. 13, lines 49-55, [item-specific coefficients]). Ouimet et al. '893 discloses this limitation in an analogous art for the purpose of showing that coefficients for specific items can be used to optimized prices. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to provide demand coefficients to the optimization engine, the demand coefficients used for estimating demand given market conditions with the motivation of utilizing coefficients to convert optimized figures according to certain conditions."

The Examiner has rejected Claim 13 under 35 U.S.C. 103(a) stating that it is "unpatentable over Ouimet et al. (US 6,094,641) as applied to claim 6 above, and further in view of Hartman et al. (6,725,208), and further in view of Ouimet et al. (6,308,162)." Regarding the same claim, the Examiner has also stated that "As per claim 13, Ouimet et al. '641 fails to disclose wherein the econometric engine determines a sales model for each demand group so that the optimization engine is able to calculate demand model for each demand group so that the optimization engine is able to calculate demand for said products by multiplying the market share model for said products with the sales model for the demand group to which the product belongs, but does disclose determining an optimized model in the abstract, lines 16-17. However, Ouimet et al. '162 discloses: As per claim 13, Ouimet et al. '641 fails to disclose wherein the econometric engine determines a sales model for each demand group so that the optimization engine is able to calculate demand for said products by multiplying the market share model for said products with the sales model for the demand group to which the product belongs, (col. 2, lines 15-17, [shown that the primary objective function is combined with the constraint function and multiplied by a weighing factor, resulting in an optimized objective function, w/Col. 4, lines 2-14, [shows that market share is the primary objective function and is multiplied by a factor to get maximized gross profits, in this case, this calculation is analogous to multiplying in the claim limitation since they both yield an optimized result]). Ouimet et al. '162 discloses this limitation in an analogous art for the purpose of using a multiplication factor to yield optimized results. It would have been obvious to one of ordinary skill in the art at the time

of the applicant's invention to determine a sales model for each demand group so that the optimization engine is able to calculate demand for said products by multiplying the market share model for said products with the sales model for the demand group to which the product belongs with the motivation of determining an optimized solution.”

Claim 6 has been amended to recite “wherein data from at least two stores is combined to obtain a Bayesian estimation of the sales model.” Support for the amendment can be found in the specification on page 60, lines 15 - 20 “econometric modeling engine relies on a mixed-model framework, simultaneously utilizing information across all stores and products in a client category, where category is defined as a collection of substitutable or complementary products. The mixed model methodology is also referred to as “Bayesian Shrinkage” modeling because by combining data from various stores and/or products, one can “shrink” individual parameter estimates.”

The instant use of Bayesian modeling is with reference to the estimation of the demand model, as noted above. Hartman '208, on the other hand, uses a Bayesian framework to optimize a neural net. (Abstract, lines 1 – 4). In this sense, the instant invention differs from Hartman '208 in that the instant invention discloses using a Bayesian model to estimate a demand or sales model rather than using a Bayesian model to optimize a system.

It is important that the instant apparatus uses a Bayesian approach in an econometric engine to estimate the demand or sales models. Hartman '208 discloses using a Bayesian approach to optimize a system. As such, Hartman '208 may suggest using a Bayesian approach to optimize the preferred set of prices in the optimization engine. Using a Bayesian approach to estimate a demand or sales model is novel and offers the advantage of “dampening the extreme values that would result if traditional regression models were used” (see specification, page 61, lines 1 – 2). “A mixed-model framework addresses the need for both highly predictive models and the existence of an estimable model for each store and product.” (Specification, page 61, lines 20 – 23).

Hence, as amended, independent Claim 6 is allowable over Ouimet '641 and Hartman '208. Applicant further submits that Claims 7 - 13, which depend from Claim 6, are also

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patentable due to their dependence from their respective patentable parent Claims. Furthermore, these dependent claims are also novel, non-obvious and patentable because of the additional patentable features recited in addition to the patentable combination of their respective parent claims.

In sum, base claims 1, 4 and 6 have been amended and are now believed to be allowable. Dependent claims 2 and 5 have been amended and are now believed to be allowable. Dependent claims 3 and 7 – 8, which depend therefrom are also believed to be allowable as being dependent from their respective patentable parent claims 1, 4 and 6 for at least the same reasons. Hence, Examiner's rejection of dependent Claims 2, 3, 5 and 7 – 8 are rendered moot in view of the amendment to independent Claims 1, 4 and 6. Applicants believe that all pending claims 1 - 13 are now allowable over the cited art and are also in allowable form and respectfully request a Notice of Allowance for this application from the Examiner. Although it is believed that no fees due in connection with the filing of this Preliminary Amendment, the commissioner is authorized to charge any fees that may be due to our Deposit Account No. 50-2766 (Order No. BR-0401). Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number 925-570-8198.

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